

Persistent Identifiers Distributed System for Digital Libraries.

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Persistent identifiers

Purpose: the association of a Persistent Identifier (PI) to a digital resource can be used to **certify** its content **authenticity**, **provenance**, **managing rights**, and to provide an **actual locator**

Reliability: the **actual persistence** of identifier systems can only be achieved through the **commitment of the organizations** that assign, manage, preserve and resolve the identifiers

User communities: the existing **user communities differ by technologies and implemented registries** → Digital Object Identifier (DOI), Archival Resource Key (ARK), Handle System, URN, PURL, etc

No general agreement has been reached among the different user communities.

Requirements

In our view the problem can be tackled with a hierarchical distributed approach BUT a credible solution should be:

Policy-based: the organisations managing the identifiers must sign and commit to a well-defined and binding policy.

Open: it should be based on open standards and technologies.

Interoperable: it should provide mechanisms to keep record of other identifiers assigned to the associated resource.

Easy to use: It should be easy an ID to the corresponding resource.

National Bibliography Number - RFC 3188

National Bibliography Number (NBN) is a Universal Resource Name (URN) namespace under the responsibility of National Libraries. Defined by the Nordic Metadata Projects on request of the CDNL and CENL.

Adoption: the NBN namespace, as a Namespace Identifier (NID), has been registered and adopted by the Nordic Metadata Projects upon request of the CDNL and CENL.

Current limitations: URNs are not directly actionable (i.e. browsers generally do not know what to do with a URN), because they have no associated global infrastructure that enables resolution (such as the DNS supporting URL).



Poster at the conference

Identifiers Systems --- DOI

ISBN: a system for unique identifiers for printed books in the world.

ISSN: a system for unique identifiers for serial publications in the world.

.....

URI e URN: Uniform Resource Identifier and Uniform Resource Name

DOI: Digital Object Identifier managed by the DOI Foundation (private) –

It uses the URI and URN standard. It's mainly for commercial editors.

It's a name not actionable on Internet. To resolve it you must use the

DOI server in order to get info about that publication or resource, title,

owner, language, and where to find it (also the price).

The NBN initiative in Italy – Current phase

Italian NBN register/resolver started in 2007 promoted by **FRD**, included **University of Milan, CILEA, BNCF**.

Software

At the beginning of 2009 the **Italian National Research Council (CNR)** joined the initiative and developed with own resources together with the FRD, a second prototype with new advanced features. A functional **service** is under implementation by the participants at national level.

CNR is responsible for the software development and license.

Management

A **Steering Committee** for experimental activities management has been established, where **BNCF, BNCR, CNR, FRD, ICCU, ASI** are represented. The board **defines the structure of the Italian NBN testbed** (domain hierarchy) and the **policies for infrastructure management, sub-domain creation/removal and PI assignment**.

Objectives

1. Propose **methodologies, tools and policies** for the management of a **national stable, trustable and certified NBN register of digital objects** to be adopted by **cultural and scientific** communities.
2. Allow an easier and wider **access to the digital resources produced by Italian cultural institutions**, including digitised or not yet published material.
3. Encouraging the adoption of **long term preservation policies**.
4. Develop an **inter-domain resolution service** (e.g., NBN:IT \leftrightarrow NBN:DE) with a common meta-data format and a user-friendly interface (pre-condition for global resolver).
5. Implement some '**accounting**' mechanisms to be leveraged in the **production of statistics about scientific publications and works**

Key points

“Trustability” model

The “trustability” of the whole system relies on a binding policy that all participating agency MUST sign in order to join the infrastructure.

Sustainable approach

Distributed responsibility and functionalities can overcome the limitations imposed by a centralised system and split up the management costs among several partners, while preserving the authoritative control.

Robust infrastructure

Redundant mechanisms must be implemented to ensure high availability of the service (data duplication, multiple service entry points, ...).

Distributed approach

At the highest level there is a root or **central node (CN)**, which is responsible for the top-level domain (IT in our case). The root node delegates the responsibility for the different second-level domains (e.g.: IT:UR for University and Research) to second-level naming authorities. **URN:NBN:IT:**

Sub-domain responsibility can be further delegated using a virtually unlimited number of sub-levels (eg.: IT:UR:CNR, IT:UR:UNIMI, etc.). The intermediate sub-domains are managed by the so-called **inner nodes (IN)**.

At the bottom of this hierarchy there are the **leaf nodes (LN)**, which are the only ones that harvest publication metadata from the actual repositories and assign unique identifiers to digital objects.

Each agency adheres to the policy defined by the parent node and consistently defines the policies its child nodes must adhere to.

Testbed configuration

Architecture

- ❑ central node at BNCF and duplicated at BNCR, responsible for the Italian **NBN:IT**, generating and managing all the sub-domains, guiding the resolution service for Italy and the international coordination;
- ❑ a second level inner node at CNR, responsible for a sample thematic sub-domain (**NBN:IT:UR**); a third level leaf node responsible for the local **NBN:IT:UR:CNR**
- ❑ a third level leaf node at UNIMI, responsible for the **NBN:IT:UR:UNIMI**
- ❑ a second level leaf node at FRD, responsible for the local **NBN:IT:FRD**

Functions

- ❑ distributed name generation for digital resources
- ❑ uniqueness and authenticity certification for generated names
- ❑ armonisation of policies among different user communities
- ❑ distributed capacity to resolve the association name-metadata-resource

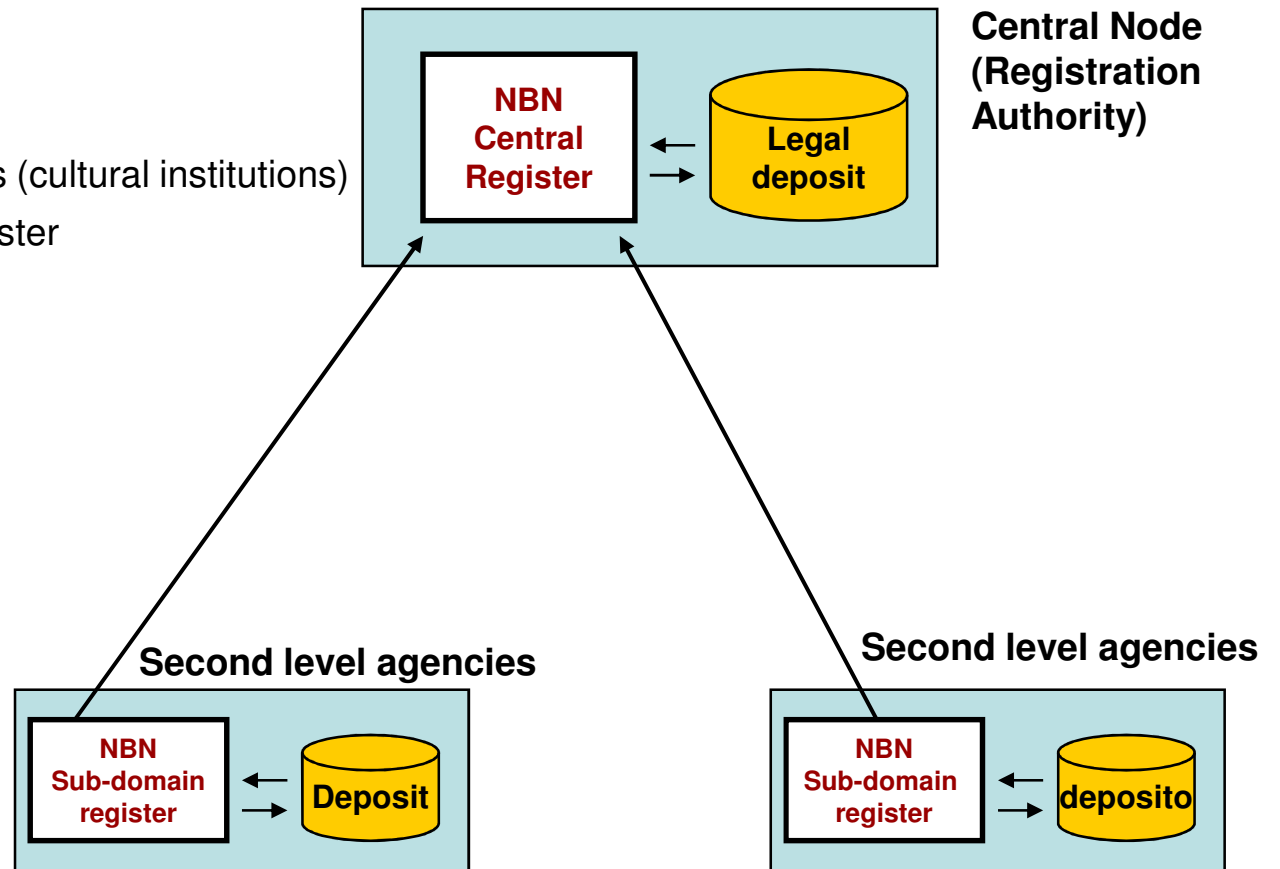


NBN System Architecture – Elements & Functions

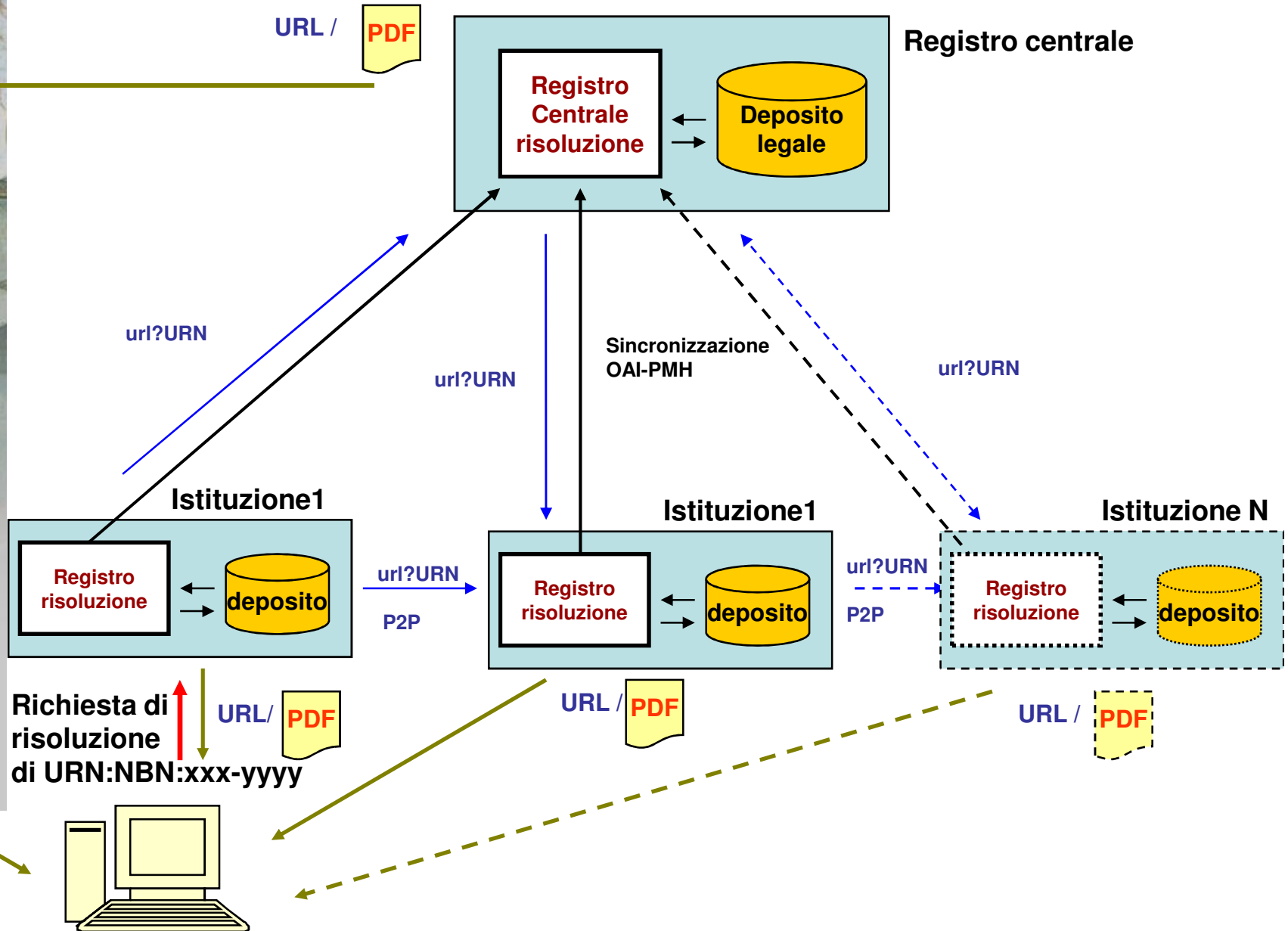
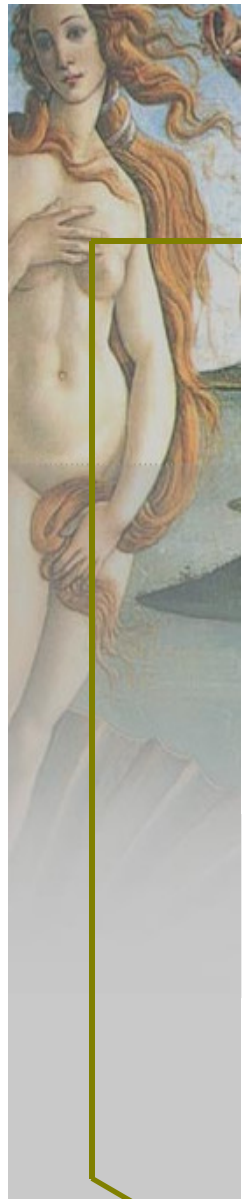
The architecture of this NBN system is carried out on two levels, with four elements and four basic functions.

ELEMENTS

- Central node (BNCF)
- second level agencies (cultural institutions)
- NBN sub-domain register
- NBN central register



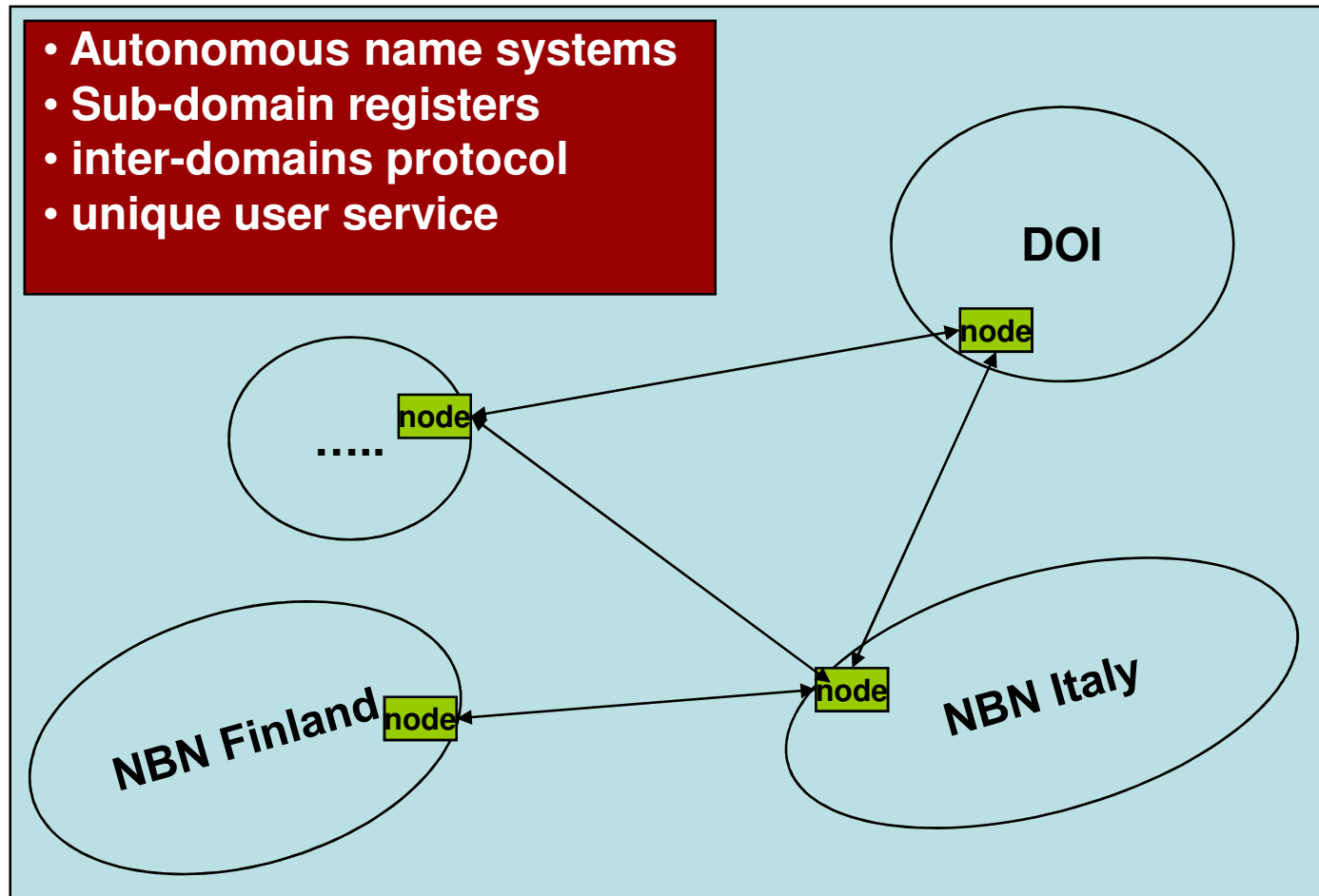
Architettura NBN – gerarchico e distribuito



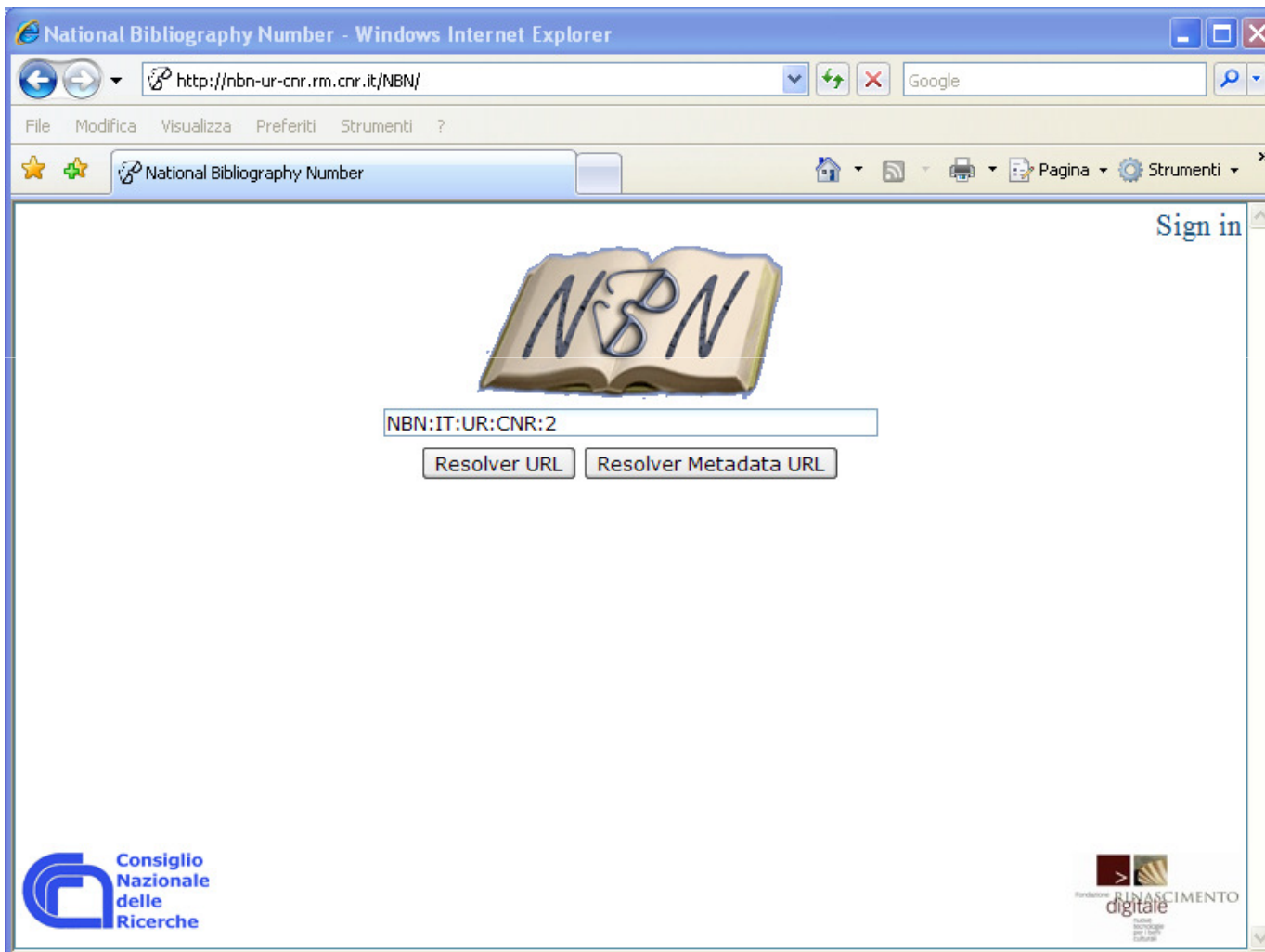


NBN project architecture in Italy

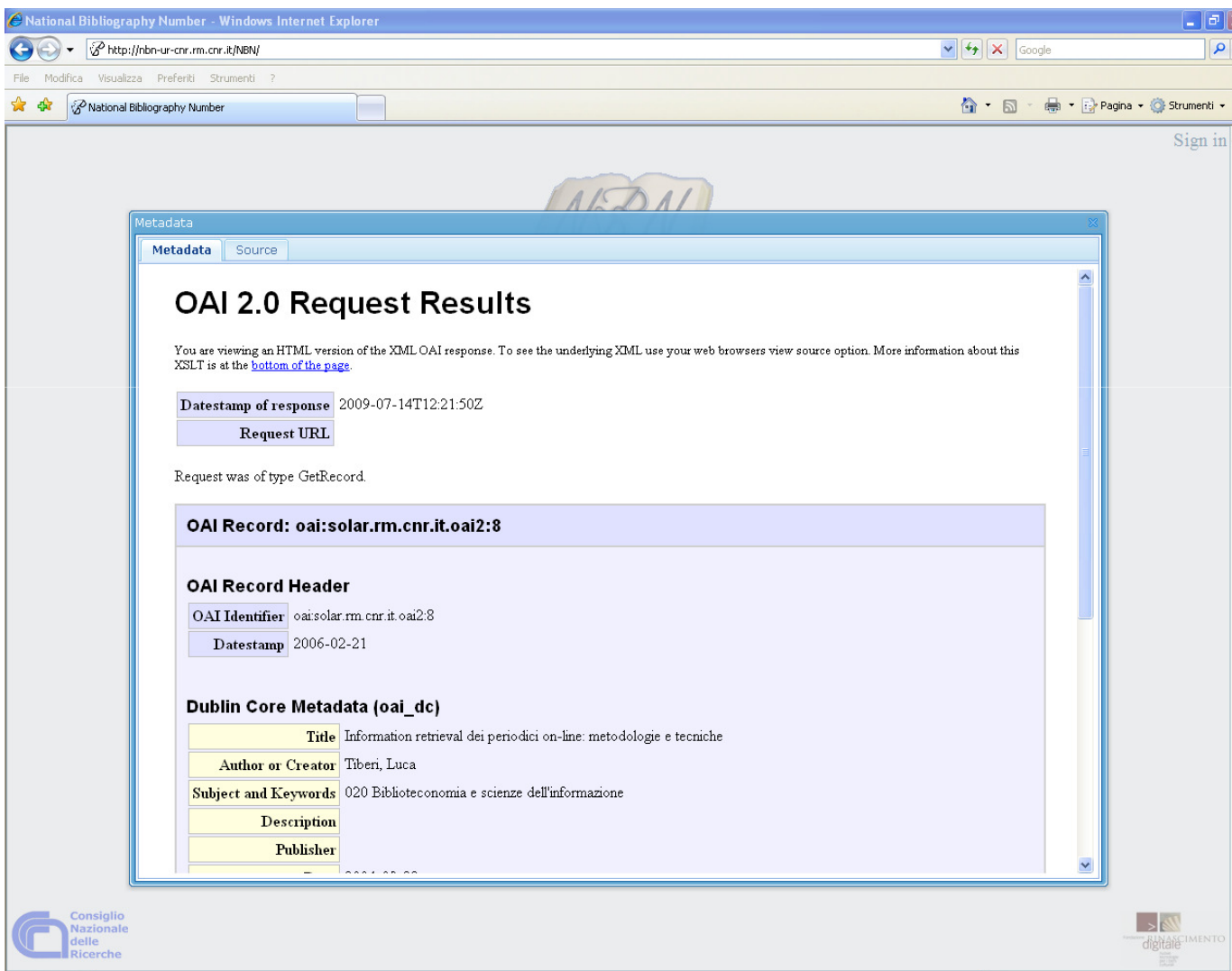
... We don't use the DNS servers, but we have used the same philosophy and network architecture.



The software 1/3



The screenshot shows a web browser window titled "National Bibliography Number - Windows Internet Explorer". The address bar contains the URL "http://nbn-ur-cnr.rm.cnr.it/NBN/". The browser's menu bar includes "File", "Modifica", "Visualizza", "Preferiti", and "Strumenti". The address bar also shows "National Bibliography Number" and "Strumenti". The main content area features a large, stylized "NBN" logo on an open book. Below the logo is a text input field containing "NBN:IT:UR:CNR:2". Underneath the input field are two buttons: "Resolver URL" and "Resolver Metadata URL". In the top right corner of the page, there is a "Sign in" link. The bottom left corner of the page displays the logo of the Consiglio Nazionale delle Ricerche, and the bottom right corner displays the logo of the Fondazione RINASCIMENTO digitale.



National Bibliography Number - Windows Internet Explorer
 http://nbn-ur-cnr.rm.cnr.it/NBN/

File Modifica Visualizza Preferiti Strumenti ?

National Bibliography Number

Sign in

Metadata

OAI 2.0 Request Results

You are viewing an HTML version of the XML OAI response. To see the underlying XML use your web browsers view source option. More information about this XSLT is at the [bottom of the page](#).

Datestamp of response 2009-07-14T12:21:50Z

Request URL

Request was of type GetRecord.

OAI Record: oai:solar.rm.cnr.it.oai2:8

OAI Record Header

OAI Identifier oai:solar.rm.cnr.it.oai2:8

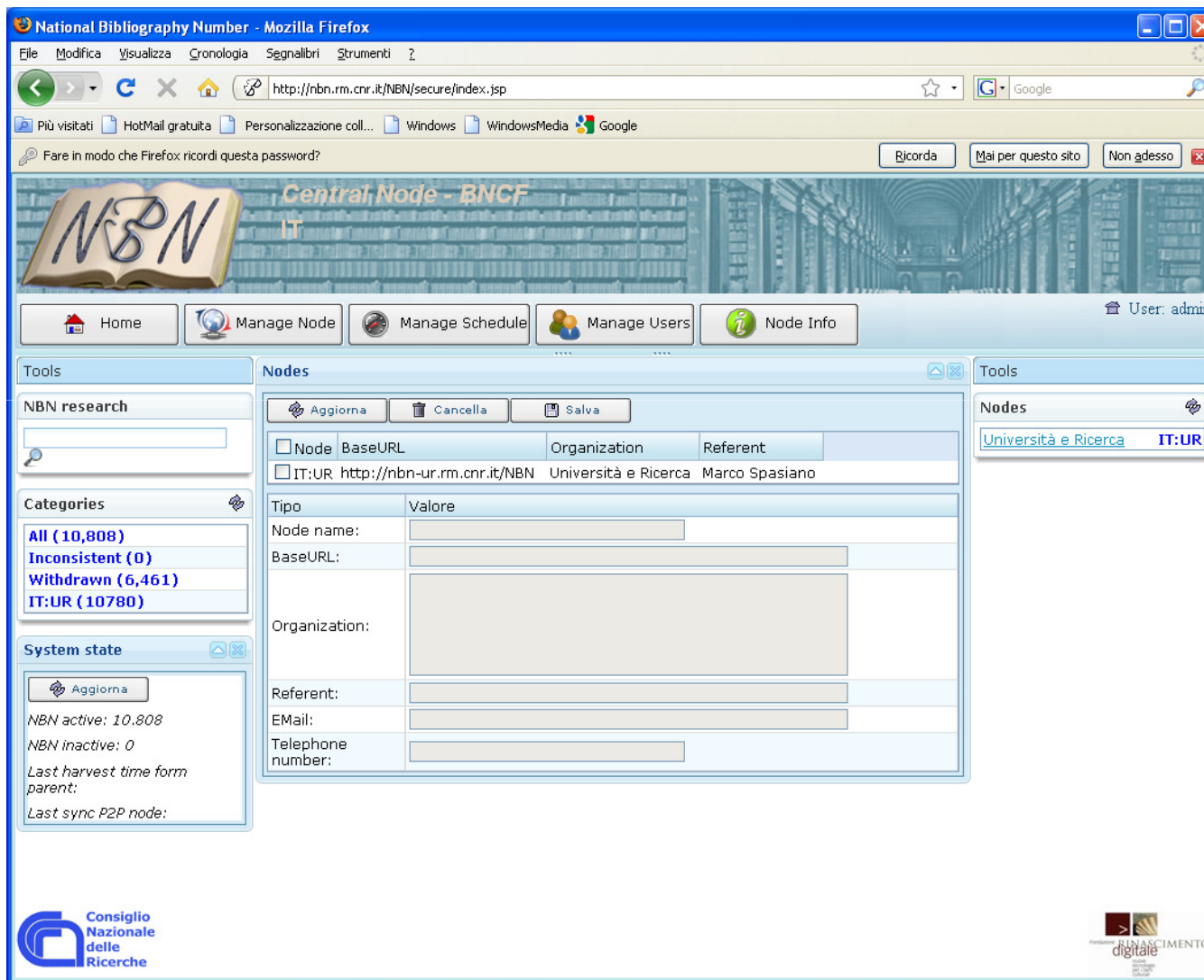
Datestamp 2006-02-21

Dublin Core Metadata (oai_dc)

Title	Information retrieval dei periodici on-line: metodologie e tecniche
Author or Creator	Tiberi, Luca
Subject and Keywords	020 Biblioteconomia e scienze dell'informazione
Description	
Publisher	

Consiglio Nazionale delle Ricerche

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National Bibliography Number - Mozilla Firefox

File Modifica Visualizza Cronologia Segnalibri Strumenti ?

http://nbn.rm.cnr.it/NBN/secure/index.jsp

Più visitati HotMail gratuita Personalizzazione coll... Windows WindowsMedia Google

Fare in modo che Firefox ricordi questa password? Ricorda Mai per questo sito Non adesso

Central Node - BNCF IT

Home Manage Node Manage Schedule Manage Users Node Info User: admin

Tools

NBN research

Categories

- All (10,808)
- Inconsistent (0)
- Withdrawn (6,461)
- IT:UR (10780)

System state

Aggiorna

NBN active: 10.808

NBN inactive: 0

Last harvest time form parent:

Last sync P2P node:

Nodes

Aggiorna Cancella Salva

Node	BaseURL	Organization	Referent
<input type="checkbox"/>	IT:UR	http://nbn-ur.rm.cnr.it/NBN	Università e Ricerca Marco Spasiano

Tools

Nodes

Università e Ricerca IT:UR

Tipo Valore

Node name:

BaseURL:

Organization:

Referent:

Email:

Telephone number:

Consiglio Nazionale delle Ricerche

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